

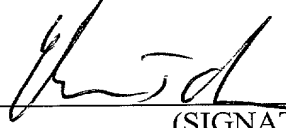
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PATENT APPLICATION
Attorney's Do. No. 5087-21

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

11/16/00
1c826 U.S. PTO

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Enclosed for filing is a patent application under 37 CFR 1.53(b) of:

Inventors: Lynn Watson, DeVerl Stokes and Greg Nalder
For: TRANSPORTABLE VOLUME, LOCAL ENVIRONMENT REPOSITORY

This application is a ☒ continuation, ☐ divisional, ☐ continuation-in-part of prior application Serial No. 60/225,528 filed August 15, 2000.

Enclosures:

- ☒ Specification (pages 1-6); claims (pages 7-8); abstract (page 9)
- ☒ 1 sheet of formal drawings
- ☒ Declaration or Combined Declaration and Power of Attorney
 - ☒ Newly executed (original or copy)
 - ☐ Copy from a prior application (37 CFR 1.63(d))
- ☐ Incorporation by Reference--The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
- ☐ Deletion of Inventors (signed statement attached deleting inventor(s) named in the prior application (37 CFR 1.63(d)(2) and 1.33(b))
- ☐ Applicant claims small entity status (see 37 CFR 1.27)
- ☒ Power of Attorney
- ☒ Assignment with cover sheet
- ☐ Certified copy of priority document:
- ☐ Information Disclosure Statement with Form PTO 1449

- ☐ Copies of references listed on attached Form PTO-1449
☐ Preliminary Amendment
☐ Change of Address
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CLAIMS AS FILED				
For	Number Filed	Number Extra	Rate	Basic Fee \$710.00
Total Claims	20-20		x \$ 80 =	
Independent Claims	4-3	1	x \$ 18 =	18.00
Multiple Dependent Claim Fee			x \$270 =	
TOTAL FILING FEE				\$728.00

- ☐ Cancel in this divisional application original claims _____ of the prior application Serial No. _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
☒ A check in the amount of \$768.00 to cover ☒ filing fee and ☒ assignment recordal fee (\$40) is enclosed.
☒ Any deficiency or overpayment should be charged or credited to deposit account number 13-1703. A duplicate copy of this sheet is enclosed.



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PATENT TRADEMARK OFFICE

Respectfully submitted,

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TRANSPORTABLE VOLUME, LOCAL ENVIRONMENT REPOSITORY

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BACKGROUND1. Field

This disclosure relates to a simulator for operating systems, more particularly to a selectable, portable simulator repository.

2. Background

Mobility in computing has become far more important. Notebook, subnotebook and palmtop computing platforms abound. Typically, users employ these devices when traveling and then synchronize their data between a base computer, either at the home or the office. This ensures that their data is updated between the two devices. Other users rely strictly on their portable platform. However, it is sometimes not convenient to carry the portable platform. This leaves the user at a loss if the user travels to a location that does not have a computer with the same operating system of the user's system.

One solution to allowing a user's environment to be simulated is VirtualPC™ software from Connectix, Inc. If a user having PC-compatible system wants to access PC software on a Macintosh computer, that user can run VirtualPC™. This is an example of software that can emulate computing environments. Current implementations target a single host system and are, therefore, not generally portable.

Other users access a base computer remotely. They use Remote Access Servers (RAS) in conjunction with software that allows them to access their base computer. This avoids the problems with synchronizing data and allows access to all of the necessary applications. However, there can be weaknesses in the communication link between the remote computer and the base computer. While they have access to their normal computing environment, they are tied to a particular method, such as a modem, to access that environment.

No method or apparatus exists in the current art that allows a user to save the entire computing environment onto a piece of removable media and access it anywhere. Examples of removable media include not only floppy diskettes and CD-ROMs, but also devices that are cable connected to a host system, such as IOMega Zip Drives™, and PakIt™ by In-

System Design. However, these are typically used as mass storage devices and do not emulate a computing environment.

One potential problem with using a simulator that can interact with a host computer is contamination, whether the contamination be from a virus or just involves changing the operating parameters of the host or the simulator. If such a simulator were provided, it would need to insulate the host computer from the simulator and the simulator from the host computer, while providing full functionality of both.

SUMMARY

One aspect of the invention is an operating environment simulation system. The system includes a memory, a connector and at least one set of instructions stored in the memory. The connector allows the simulation system to be connected to a host system. Upon connection, the instructions can be executed, allowing the user to establish a simulated operating environment on the host computer.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be best understood by reading the disclosure with reference to the drawings, wherein:

Figure 1 shows one embodiment of an operating environment simulation system in accordance with the invention.

Figure 2 shows one embodiment of a method of connecting a memory device with a host computer in order to establish a simulated operating environment in accordance with the invention.

Figure 3 shows one embodiment of a method of insulating an operating environment simulator from a host computer, in accordance with the invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

An operating environment simulation system is shown in Figure 1. This simulation system will be referred to as such, a simulator or a memory device. One of its functions is as a transportable volume acting as a local environment repository. The operating environments it may emulate would be those commonly used by computer users, including Windows™ 95/98/2000/NT, referred to here as Windows™ XX, Unix, Linux and MacIntosh. Those

operating systems that run on the IBM-PC compatible standard will be referred to as personal computer (PC) compatible. The system 10 includes a memory 12 and a connector 14.

The memory 12 includes a set of instructions, referred to here as a simulator 18.

There may be several versions of the simulator installed in the memory device 12. Each copy of the simulator is intended for a different operating system and/or processor combination on the host computer. The combinations of processor and operating system are only limited by the manner in which the simulators are packaged. For example, there could be a simulator packaged by processor, such as the Intel Pentium 3™. The memory device may have several copies of the simulator on it, one each for Windows XX, Linux and Unix. Alternatively, the simulators could be packaged by operating system, such as one for Windows XX, with several versions for common processors.

Within the memory device is a data file 16. The data file 16 contains all of the elements of the original operating environment to be simulated by the host computer. The data file will typically remain the same, as it is accessible by the simulators. When connected to the host computer 20, the operating system of the host computer runs the simulator as a task and accesses the data file. Once the data file is accessed, the host computer becomes a simulation of the original operating environment.

It must be noted that the host computer does not have to be a complete personal computer system. The simulator only requires a processor 22 that is running an operating system and a connector. This could include any number of accessories available today, such as palmtop devices, notebook computers, possibly even cellular phones, if the phone has the correct connectors, operating system and processor. These non-PC devices will be referred to as accessory devices.

Similarly, the cable 24 may not be necessary depending upon the standard used to establish communication between the two systems. If the standard used is IEEE (Institute of Electrical and Electronic Engineers) 1394, also known as 'firewire,' or USB (Universal Serial Bus), a cable will be needed. Other types of connections, such as wireless communications in accordance with a given wireless standard such as 802.11b, Ethernet, or infrared connections could also be made. The connectors in those examples would be of the appropriate technology to allow information to pass between the host computer and the simulation system. In some embodiments, a USB cable that can connect directly to the host computer may be the easiest and most convenient configuration. The user can connect the simulation system by simply plugging in the cable to the host computer.

In the below discussion of the operation of the invention, there will be two different operating systems or operating system versions discussed. The host computer to which the simulation system connects and executes the simulator will have an original operating system. This is the operating system under which the host computer is running when the simulator is loaded onto the host computer. The simulated operating system is that operating system being simulated by the simulation system. The two operating systems may be of different types and/or versions, as will be discussed below.

Figure 2 shows one embodiment of a method of establishing a simulated operating environment upon connection between the memory device and the host computer. At 26, the connection is made. Using a plug-and-play sequence familiar to most users, the host computer will display the new device as an attached memory device, with a list of executable files. The list of executable files is the various versions of the simulators available on the memory device in the simulation system. For example, the user may connect the simulation system as drive 'E:' and display a list of files on that drive. The files may be named so as to make the identification of the appropriate file easy on the user, such as 'Windows XX.exe' or 'Linux.exe.'

The host system receives the user input and loads the version of the simulator desired, from the memory of the simulation system to the host processor at 30. The host processor then executes the selected set of instructions at 32. Upon execution of the selected simulator, the simulated operating environment is established on the host computer or accessory device.

The system allows the user to exactly replicate the typical computing environment in which that user operates. The user may use Windows NT™ at work. Desiring to work at home in the same operating system, the user takes his simulator and plugs it into his home computer. The home computer may have some other member of his family running a task, such as a download in Windows 98™. A pop-up window appears inquiring as to the selection of an executable file from the new device. The user selects the proper simulator. The selection and execution of the proper simulator will cause the host computer to appear to be a Windows NT™ system, even though the original operating system of the host computer is Windows 98™.

In some embodiments, the host computer may identify the proper file and execute it without interaction from the user. For example, the file may be named according to a naming convention of the primary operating system on the host computer or accessory device. The

primary operating system would access the file and execute it without waiting for an input from the user.

However selected, the simulator then provides the processor with the necessary data and applications to run as if it were a Windows NT™ system. The user can now move
5 around and perform tasks in the same environment as he uses at work. No preconfiguration or modification of the host computer is necessary to run the simulated operating system.

One concern with this approach is any possible contamination or interference between the simulator and the host computer. Figure 3 shows a flowchart of one embodiment of a method to prevent this kind of contamination. The set of instructions that comprise the
10 simulator will also operate to insulate the two systems to prevent any inadvertent or intentional interaction between them.

As can be seen in Figure 3, any type of task management available to the primary operating system will be disabled at 34. For example, the primary operating system may be Windows 98™, as in the above example. In this operating system, it is possible to press
15 *ALT-TAB* to switch between tasks running in the primary operating system. Other types of task management are available, depending upon the operating system. Conceivably, one could press *ALT-TAB* while the secondary operating system is running from the simulator and switch to other tasks running on the primary operating system. However, with the simulator software in place, this type of interaction may be prevented.

It is possible that the user may want some sort of interaction between the two systems.
20 For example, the user may have worked on a file at the office that he wants to save onto his home computer. The simulator may allow some sort of user selection to define the nature of allowed interactions. In order to access the underlying system, various types of security could be required, such as passwords. However, for this example, complete insulation will be
25 assumed.

In order to ensure complete insulation, input devices will have to have their interrupts routed to run only through the secondary operating system at 36. Devices such as keyboards, joysticks and mice generate an interrupt or other type of signal that notifies the host processor of an input signal. Once the simulator starts to operate, all input/output signals will be routed
30 through it to allow the simulator to enforce the insulation. This will prevent any contamination and will allow tasks running on the primary operating system to remain undisturbed.

As a failsafe to ensure insulation, an environmental shut down can be provided that allows the host system to protect itself at 38. Inadvertent or intentional actions could cause the insulation between the systems to be breached. If that happens, the simulator will effect an environmental shutdown of the secondary operating system as shown at 38. Otherwise the system continues to operate.

In this manner, users are provided with the ability to preserve a current operating system environment and transport it to another computer or computing device. The simulator can be connected to any computing device with a processor and the proper connector. Users can now transport their local environment with a smaller, lighter, more convenient device than a typical laptop computer.

Thus, although there has been described to this point a particular embodiment for a method and apparatus for an operating environment simulation system, it is not intended that such specific references be considered as limitations upon the scope of this invention except in-so-far as set forth in the following claims.

WHAT IS CLAIMED IS:

1. An operating environment simulation system, comprising:
 - a) a memory, operable to store instructions and data;
 - b) a connector, operable to connect the memory to a host computer; and
 - 5 c) at least one set of instructions stored in the memory, operable to simulate an operating environment on the host computer.
2. The system of claim 1, wherein the connector is a Universal Serial Bus cable.
3. The system of claim 1, wherein the connector is an IEEE-1394 cable.
4. The system of claim 1, wherein the connector uses an infrared link.
- 10 5. The system of claim 1, wherein the connector is an Ethernet cable.
6. The system of claim 1, wherein the connector uses a wireless link in accordance with 802.11b.
7. The system of claim 1, wherein the host computer is personal computer compatible.
8. The system of claim 1, wherein the host computer is Macintosh compatible.
- 15 9. The system of claim 1, wherein the at least one set of instructions in the memory further comprises a set of instructions for several different operating systems.
10. The system of claim 1, wherein the at least one set of instructions in the memory further comprises a set of instructions for several different processors.
- 20 11. A method of establishing a simulated operating environment on a host computer, the method comprising:
 - a) connecting a simulation system having a memory device to a host computer;
 - b) loading a set of instructions from the memory device to the host computer; and
 - c) executing the set of instructions to establish a simulated operating environment on the host computer.
- 25 12. The method of claim 11, wherein method further comprises receiving a user input designating the set of instructions to be loaded from the memory device.
13. The method of claim 11, wherein the method further comprises selecting a set of instructions automatically, wherein the selection is made by the host computer.
14. The method of claim 9, wherein the host computer is an accessory device.
- 30 15. A method of insulating an operating environment simulator from a host computer, the method comprising:
 - a) blocking host task managing applications on the host computer;
 - b) routing all inputs through the simulator; and

c) activating an environmental shutdown if necessary to prevent interactions between host computer and simulator.

16. The method of claim 15, wherein blocking host task managing applications further comprises a complete block.

5 17. The method of claim 15, wherein blocking task managing applications further comprises a partial block.

18. The method of claim 15, wherein the interactions further comprise any interaction.

19. The method of claim 15, wherein the interactions further comprise selected interactions.

20. A method of establishing a simulated operating environment on a host computer, the method comprising:

- a) connecting a simulation system having a memory device to a host computer;
- b) loading a set of instructions from the memory device to the host computer; and
- c) executing the set of instructions to establish the memory device of the simulation system as an external memory device for the host computer.

TRANSPORTABLE VOLUME, LOCAL ENVIRONMENT REPOSITORY

ABSTRACT

An operating environment simulation system. The system includes a separate peripheral simulation system having a memory device. The memory device is operable to store one or more executable programs, referred to as simulators. The simulators are operable to simulate an original operating environment. Multiple simulators may be deployed on the simulation system to allow execution and presentation of an original operating environment on several different host computers. The system also includes a method for connecting the simulation system to a host computer or accessory device upon which the simulation will run. The simulator may employ insulation processes to limit interaction between the simulation system and host computer resources.

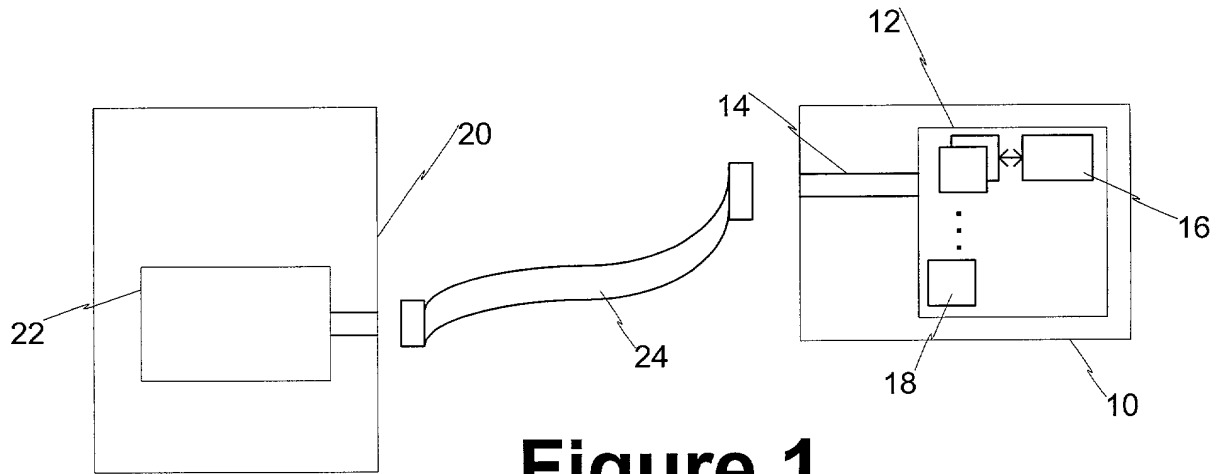


Figure 1

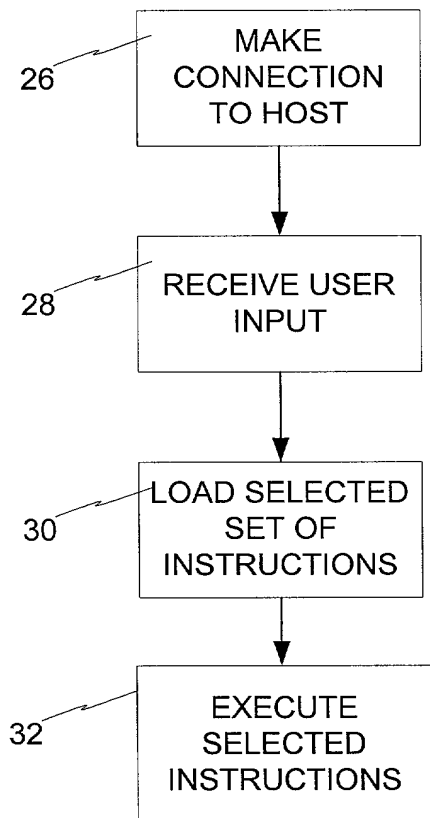


Figure 2

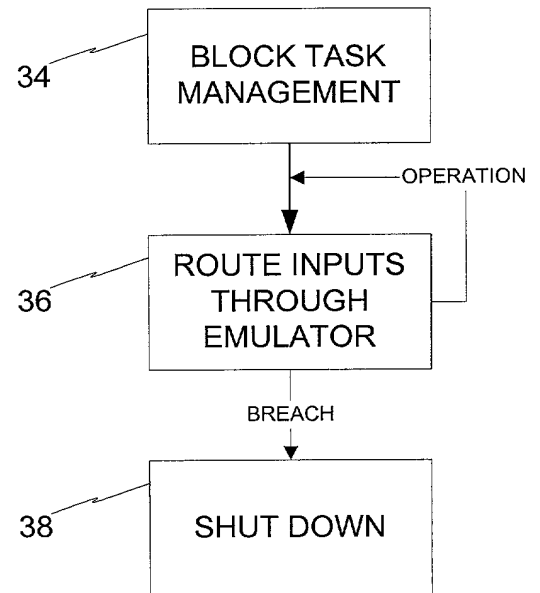


Figure 3

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled TRANSPORTABLE VOLUME, LOCAL ENVIRONMENT REPOSITORY, the specification of which:

☒ is attached hereto.

☐ was filed on _____ as
Application Serial No. _____

☐ and was amended on _____
(if applicable)

☐ with amendments through _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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I hereby claim the benefit under Title 35, United States Code, Sec. 119(e) of any United States provisional application listed below:

Provisional Application No.

60/225,528

Filing Date

August 15, 2000

I hereby claim the benefit under Title 35, United States Code, Sec. 120 of any United States application(s), or Sec. 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, Sec. 112. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

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(Filing Date)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Lynn Watson, DeVerl Stokes and Greg Nalder

Serial No.: (filed herewith) Group Art Unit: to be assigned

Filed: (filed herewith) Examiner: to be assigned

For: TRANSPORTABLE VOLUME, LOCAL ENVIRONMENT REPOSITORY

Assistant Commissioner for Patents
Washington, DC 20231

**POWER OF ATTORNEY BY ASSIGNEE OF ENTIRE INTEREST
AND REVOCATION OF PRIOR POWERS**

I, Lynn Watson, President of In-System Design, Inc., having a place of business at 12426 W. Explorer Drive, Suite 100, Boise, Idaho 83713, assignee of the entire right, title and interest of the above-described U.S. patent application, by the assignment submitted under separate cover for recordal (copy enclosed), represent that I am empowered to sign on behalf of assignee.

As assignee of the above identified application, all powers of attorney previously given are hereby revoked and the following attorneys and/or patent agents are hereby appointed to prosecute and transact all business in the Patent and Trademark Office connected therewith:

Customer No. 20575

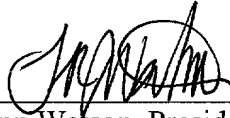
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Date: 9 NOV, 2000



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